UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: November 20, 1987

SUBJECT: Project Site - Unifirst Corp.,
Overview and Spilt sampling with ERT contractors

FROM: Edward J. Kim, E.J.K.
ESD - Water Section

soil
on new wells

TO: Barbara Newman,
HRS - MA Superfund

As per your request made in September, 1987, personnel from ESD Water Section overviewed and reviewed contractor ERT carry out a field investigation at Unifirst Corp's site in Woburn, MA. The purpose of this investigation was to determine, if any, the nature and extent of free product in the aquifer underlying Unifirst site property to the extent feasible. The task involved installing six shallow bedrock monitoring wells and analyzing the ground-water samples from these wells. Summarized below for your review are the general procedures used during this investigation and any observed special circumstances or alternations from ERT's project plan, Project Operation and Investigation Plan (Document No. P-D495-004, Edition Sept. 8, 1987). Present during the investigation were; representing ERT, Jeff Lawson (Project Officer) and Larry Hogan (Field Personnel); Drillers from Mahar Company (North Reading, MA); and personnel of Franklin Pumping Service Inc.

In general, the field investigation was conducted by ERT as outlined by their project plan. No deviation nor any special circumstances altered the work as set forth by the project plan.

Installation of Wells:

From September 28, 1987 to October 2, 1987, ERT's contract drillers, Mahar Company, installed six monitoring wells on the Unifirst property. The approximate locations can be found in Figure 2-1 of ERT's Project Operation and Investigation Plan document. These well locations were choosen by ERT to provide direct information on whether free product is present in shallow bedrock in the vincity of existing monitoring wells with suspected contamination problems. Wells UC-C and UC-D were installed next to existing well UC-8; Well UC-E between existing wells UC-8 and UC-7; Wells UC-A and UC-B between wells UC-8 and UC-10; and in the vicinity of well UC-6 well UC-F was installed.

The wells installed are all six inches in diameter with 2 inch diameter inner well casing. Steel casings were installed through the unconsolidated deposits and socketed into the top of rock to the minimum depth necessary to minimize caving of the open bedrock boring. The casings were not grouted in place. Borings were then continued to a depth twenty feet below the top of rock. The wells were then finished by cutting casing off at ground surface and installing road boxes supported in concrete collars around the casings.

The wells were drilled by the use of an air-rotary type rig that was equipped with a cuttings-collection system. This system collected the cuttings as they emerged from the annular space between the casing and the drill rods. From there, the cuttings were conducted to a cyclone from the bottom of which the cuttings were discharged into a box mounted on a BobCat forklift. When the box became full, the cuttings were transported and dumped into a roll-off container located at the site (Franklin Pumping Service, Inc. of Wrentham, MA was contracted to provide handling, transport and appropriate disposal service for the cuttings). The level of volatile organic compounds, if any, emanating from the cuttings were continuously monitored with an HNu meter at the top and bottom of the cyclone. The air-rotary rig presented a problem in the attempt to observe volatile organic compound levels. This system aerates the cuttings as it is conducted to the cyclone and any volatile organic compound that may be present has the potential to be stripped and volatilized. This may have been the reason why no level of volatile organic compound was observed with the HNu meter.

Sample Collection:

It was the intention to collect samples for VOC Soil analysis and samples to be examined for diatomaceous earth whenever the cuttings produced a response on the HNu meter, however, because of the air-rotary rig collection system and failure to get any response readings at any of the wells, samples were collected at 5-10 ft. depth intervals or when soil contamination was suspected (i.e. color change or odor). Ground-water samples were collected on October 28, 1987 and were split between ERT and EPA upon collection. The EPA samples were sent out to contract laboratories for analysis and the data are unavailable as yet.

Sample Analysis:

Analytical Procedure: 7 soil samples and the rinse water for the drilling process for background information were collected for VOC screening . Approximately 10 grams (wet weight) of soil sample was tared in a 40 ml VOA vial. 10 mls of pesticide grade methanol was added to the sample and the vial was then sonicated for one minute. A one to fifty dilution was made on the methanol extract in organic free water and then analyzed as per to EPA Region I headspace technique on a Photovac Moded 10A10 gas chromatograph equipped with a photoionization detector and a 4" x 1/8" SE-30 Column. Aqueous samples were analyzed as per the Region I headspace technique. Table II. lists the volatile organic compounds tentatively identified and their detection limits.

Diatomaceous earth samples were collected at 5-10 ft intervals at each well and examined at ESD under a microscope. The cuttings studied did not show evidence of diatomaceous earth.

Quality Control: Field blanks were analyzed with the sample survey. Syringe checks were run routinely to check for cross-over contamination from one sample to the next. The field blank and syringe check samples were both produced clean results.

Table I. presents the available results of samples taken during the installation of the monitoring wells. The HNu monitoring readings are not summarized, since all readings were no response. The cuttings were monitored with the HNu meter every 1 ft. at the top and bottom of the cyclone.

If you have any questions, please contact me at 860-4376.

Enclosure

Unifirst Corporation
Table I.
VOC Analysis by Headspace Technique
(Sept.- Oct., 1987)

Sample Location:	Trip Blank	Rin001	UC-F (UC-15)	UC-E (UC-16)	UC-C (UC-17)	UC-B (UC-18)	UC-B (UC-18)	UC-A (UC-19)	UC-D (UC-20)
Depth to Bedrock (ft)	-	-	51	8	7	15	15	37	6
Sample No.	86528	86529	86530	86532	86533	86534	86535	86536	86537
Date (m/d/yr)	9/29/87	9/29/87	9/29/87	9/30/87	10/1/87	10/2/87	10/2/87	10/5/87	10/6/87
Time (hr:mm)	07:15	08:10	08:39	08:45	08:10	07:05	07:45	07:32	07:45
Depth (ft)	-	-	(5-10)	(2-5)	(2-5)	(2-5)	(5-10)	(3-6)	(3-6)
Matrix	Water	Water	Soil	Soil	Soil	Soil	Soil	Soil	Soil

Tentative Identification and Quantitation

Target Compounds (units in ppb)

Tetrachloroethylene*	-	-	-	-	290	-	-	-	-

Table II
Votalile Organic Analysis by
EPA Region I Headspace Technique
Compound list and Detection Limits

Target Compound	Detection Limit (ppb)
1,1 Dichloroethylene	51
Trans 1,2 Dichloroethylene	51
Cis 1,2 Dichloroethylene	51
1,1,1 Trichloroethane	2550
Benzene	51
Trichloroethylene	51
Tetrachloroethylene	51
Chlorobenzene	102
Ethyl benzene	102
Total Xylenes/styrene	51
Toluene	51

Other Compounds Tentatively Identified: None